

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
9 September 2005 (09.09.2005)

PCT

(10) International Publication Number  
**WO 2005/083390 A1**

(51) International Patent Classification<sup>7</sup>: **G01N 15/06**,  
33/00, 33/48, 35/00, 1/10

(21) International Application Number:  
PCT/US2005/005445

(22) International Filing Date: 18 February 2005 (18.02.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/546,235 20 February 2004 (20.02.2004) US

(71) Applicant (for all designated States except US): **RE-  
SEARCH FOUNDATION OF THE STATE UNI-  
VERSITY OF NEW YORK [US/US];** N5002 Melville  
Library, Stony Brook, NY 11794 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **GORFINKEL, Vera**  
[RU/US]; 29 Sycamore Circle, Stony Brook, NY 11790  
(US). **KABOTYANSKI, Evgeni, A.** [RU/US]; 342 East  
Broadway, Port Jefferson, NY 11777 (US).

(74) Agents: **LEKUTIS, Christine, A.** et al.; Medlen & Car-  
roll, LLP, 380 Lexington Avenue, Suite 1700, New York,  
NY 10168 (US).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ,  
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,  
ZM, ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,  
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND DEVICE FOR MANIPULATING LIQUIDS IN MICROFLUIDIC SYSTEMS

(57) Abstract: The present invention relates to microfluidic systems having components with specially designed and fabricated areas of enhanced and/or reduced capillarity (flow guides). The methods and devices of the present invention permit the bubble-less dispensing and mixing of small volumes of different liquids for subsequent incubation and/or detection of products of various biological reactions. Thus present invention is well-suited to applications such as polymerase chain reaction and capillary electrophoresis.

WO 2005/083390 A1